



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Technical Review Workgroup Bioavailability Committee

An interoffice workgroup convened by the Office of Superfund Remediation and Technology Innovation

MEMBERS OF THE TECHNICAL REVIEW WORKGROUP COMMITTEE

Via e-mail

Date: July 9, 2013

Subject: Review of "Baseline Human Health Risk Assessment: San Jacinto River Waste Pits Superfund Site, Section 5.1.2.2.2, Exposure Parameters" (dated May 2013)

From: Michele Burgess, Kirk Scheckel, and Mark Maddaloni
Chairpersons of the Bioavailability Committee of the Technical Review Workgroup

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This memorandum was prepared in response to your June 10, 2013 request for review of "Baseline Human Health Risk Assessment: San Jacinto River Waste Pits Superfund Site, Section 5.1.2.2.2, Exposure Parameters". If you have questions or would like clarification on the comments below, please feel free to contact us.

The Bioavailability Committee has the following comments.

1. (page 5-9, paragraph 3): *For carcinogens that were evaluated with a CSF, the averaging time was set equal to a lifetime (i.e., 78 years or 28,470 days) (USEPA 1989, 2011a).*

EPA recommends 70 years as the exposure averaging time for estimating life-time cancer risk rather than the current estimated of the average lifespan of the U.S. population (e.g., 78 years).

2. (page 5-12, first full paragraph): *Based on USEPA's (2011a) recommended ingestion rates for soil, soil and sediment ingestion rates of 20 mg/day were assumed for adults and used to evaluate both CTE and RME estimates.*

The 20 mg/day sediment ingestion rate seems low and the Fish Ingestion rate was based on the UCL of the mean and not an upper percentile. Exposure parameters for several scenarios may be low or were used in the subsistence scenario which was downplayed.

Commented [JK1]: Michele – not sure if this date is correct.

3. (page 5-15, paragraph 3): *This value was derived from data on the bioavailability of TCDD in soils from a range of studies selected and presented by USEPA (2010d) in their Final Report on Bioavailability of Dioxins and Dioxin-Like Compounds in Soil. In their report, USEPA identified six studies that reported a total of 17 RBA test results for 2,3,7,8-TCDD in soil and sediment at concentrations ranging from 1.9 to 2,300 pg/kg. These studies reported bioavailability ranging from less than 0.01 to 0.49 (i.e., <1–49 percent). The arithmetic average of the mean bioavailability from each study was 0.23 (i.e., 23 percent).*

Summary statistics for ABA (e.g. range: 0.01-0.49) average: 0.23) are reported without providing the basis for these estimates. Although USEPA (2010d) is cited as the source for the estimates, USEPA (2010d) does not actually report ABA values for most of the studies for reasons that are discussed in the report:

In most studies considered in this report, elimination fractions were not estimated. As a result, reported estimates for the ratio ID/ED would be expected to underestimate absolute bioavailability to varying degrees depending on the elimination kinetics of the specific PCDD/F congeners considered. In this analysis, the ID/ED ratios for the test and reference materials were used in the calculation of RBA; no attempt was made to estimate absolute bioavailability. (page 13, paragraph 2).

Given the importance of these estimates in their estimation of dioxin risk, the basis for the estimate of ABA for 1,3,7,8-TCDD should be provided.

4. (page 5-15, paragraph 3): *This value represents the “absorbed fraction from exposure medium on site” in Equation 5-5, above, and was divided by the assumed absorbed fraction of 0.50 (i.e., 50 percent) used in establishing toxicity criteria for DLCs adopted for this BHHRA (JECFA 2002).*

This statement suggests that an ABA of 0.50 was assumed in the toxicity studies used to establish “toxicity criteria”. Given the importance of this assumption in their estimation of dioxin risk, the basis for the assumption should be provided.